



KAY MARIOT

# COPPER

Element Symbol: **Cu**

Atomic Number: **29**

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The name comes from the Latin word Cyprium, after the island of Cyprus. Copper has been mined for over 6000 years. There is evidence that every ancient culture used copper with Archaeological evidence suggests people used copper as early as 5000BC. The Egyptians used the ankh symbol to denote copper in their hieroglyphs.

Australia is the fourth largest producer of copper in the world (after Chile, USA and Indonesia). In fact, Australia is estimated to have 6% of the world's copper resources (3rd after Chile and the USA). Copper is mined in Australia mainly from the Olympic Dam mine in South Australia and the Mount Isa mines in Queensland. It is also found in significant amounts in New South Wales, Western Australia and Tasmania.

Copper is malleable (able to be bent into different shapes) and ductile (able to be drawn out into a wire. All useable gold contains some copper to make it harder – even 24 carat gold. Copper is used in many alloys including brass (copper and zinc) and solder (copper, zinc and tin). It is an excellent conductor of heat and electricity (second in electrical conductivity only to silver – but much cheaper). Copper is used mainly for electrical wire and in pipes for plumbing in the 21st century. It is also used extensively by the automotive and telecommunications industry. It is important in the manufacture of electronics. The use of copper in nanotechnology is a current focus of research in Japan.

Bronze is an alloy made from copper (about 88%), tin (about 12%) and (sometimes) trace amounts of lead. It was the first metal used widely by humans and marked the advancement of human culture from the Stone Age to the Bronze Age (around 3000BC). Bronze was an important alloy for many cultures – especially the Chinese. Many ceremonial temple vessels were crafted out of bronze and used for sacrifices to the gods of heaven, earth, the mountains and rivers. In modern China, bronze is still a popular alloy and traditional bronze art can be found in incense burners and sacrificial vessels in temples, in statues in schools or in decorations in homes.

The coating observed on copper and bronze after exposure to high humidity or when buried underground is called a patina. It serves as a protective coating and is a form of oxidation. The colour can range from rouge red to emerald green and sapphire blue (depending on the impurities present in the metal). The Chinese are particularly fond of this coating and struggle to preserve it.

The Statue of Liberty contains over 81 000 kilograms of copper. It has withstood over 100 years of wind, rain, salt spray and sun and remained basically intact. The weathering and oxidation (the green colour) has resulted in a loss of less than 0.13mm from the copper skin of the statue.

Policemen were nicknamed cops or coppers because their uniforms had (have?) copper buttons. All Australian coins contain copper. It is estimated that about 80% of the copper we have ever produced is still in use as it is easily recycled.

*Provided by the element sponsor Katherine Warriner*

## ARTISTS DESCRIPTION

I chose the nostalgic copper kettle to represent copper in this project. The copper kettle represents one of the many everyday uses that copper has. To me, the copper kettle is a heart warming object. I also had recently watched a stage production of the Sound of Music and the Julie Andrews song My Favourite Things was fresh in my mind.

*Raindrops on roses and whiskers on kittens,  
Bright copper kettles and warm woollen mittens.*

My copper kettle was initially a monoprint that was later coloured digitally. The actual colour of copper is so beautiful but hard to do justice when representing the colour artistically!

**KAY MARIOT**